NOTES.

THE Thomas Young lecture of the Optical Society will be delivered in the lecture hall of the Chemical Society this evening by Prof. R. W. Wood, of the Johns Hopkins University, Baltimore, U.S.A. The subjects will be "The Echelette Grating" and "The Mercury Telescope."

LIEUT. FILCHNER, the German explorer, in an address at the meeting of German naturalists and physicians at Königsberg, announced, says Reuter, that the start of his Antarctic expedition could with a certainty be fixed for the spring of 1911. He has agreed with Captain Scott, who starts from the Ross Sea for the Pole, while Lieut. Filchner's base will be the Weddell Sea, that, if the expeditions meet in the centre of the Antarctic, some of Captain Scott's party shall join his and accompany him to the Ross Sea, and that some of his party shall go with Captain Scott to the Weddell Sea.

WE learn from the *British Medical Journal* that the fifth International Dairy Congress, which will be held in Stockholm in 1911, offers a prize of 20*l.* for the best essay on the nutritive value of raw milk as compared with that of pasteurised, sterilised, or evaporated milk, determined, at least in part, by experiments made upon infants. In case the raw milk is found to give the better results, it is requested that the *rôle* played by the enzymes of the milk be determined if possible. The papers, which may be written in German, French, or English, and typewritten, should be sent before April 1, 1911, to the Secrétariat-général de la Fédération internationale de Laiterie, 23 rue David Desvachez, Bruxelles, Belgium.

THE observatory of the Hampstead Scientific Society is now in full working order. It is equipped with an 8-inch equatorially mounted reflector telescope, which may be used by members of the society on any evening by arrangement with the secretaries, and by the public on Saturday evenings. A special meeting of the astronomical section of the society will be held on October 5, at 8.30 p.m., at Stansfeld House, Prince Arthur Road, Hampstead, when a paper on Saturn will be read. For several successive evenings following the observatory will be devoted to demonstrations on Saturn. Inquiries may be addressed to Mr. P. H. Hepburn, one of the honorary secretaries of the astronomical section, 49 Downshire Hill, Hampstead.

THE Marconi Wireless Telegraph Company announces that it has received a Marconigram from the Italian Lloyd steamship *Principessa Mafalda* stating that Mr. Marconi, who was on board, has been successful in obtaining wireless messages from Clifden, Ireland, and Glace Bay, Canada, stations up to a distance of 3500 miles, in broad daylight. A kite was used for the support of the aërial wire on the vessel, and, except for encountering high wind, which stopped kite-flying, Mr. Marconi is confident that a greater distance would have been achieved. The distance easily excels all accomplishments in the reception of wireless messages on shipboard in the daytime, the greatest previous distance at sea being 1750 miles.

THE Berlin correspondent of the *Times* announces the death, in his sixty-fourth year, of Prof. Theobald Fischer, professor of geography in the University of Marburg. Prof. Fischer made valuable contributions to the knowledge of the structure of the plateau of the Atlas; and the results of most of his researches are to be found in *Petermann's Mitteilungen* and in the Proceedings of the Hamburg Geographical Society. He was the author of a work on the peninsulas of southern Europe in Kirchhof's "Länderkunde Europas," and of books on the date palm (1881) and the olive (1904).

M. G. CHAVEZ was successful on Friday, September 23, in making a flight with a Blériot monoplane across the Alps from Brigue to Domo d'Ossola, but he had the misfortune to meet with a severe accident when landing, from the effects of which he died on Tuesday, September 27. To traverse by aëroplane a distance of about thirty miles of snow-covered mountain, including the Simplon, which reaches a height of 6600 feet, is a notable achievement, even though it has a sensational aspect. M. Chavez started at 1.30 p.m., and reached Domo d'Ossola at 2.19; over the Simplon Pass he encountered a very high wind, which caused him to take the route over the Gorge of Gondo instead of going by the shorter route over the Mousoera Pass. When quite near the landing place at Domo d'Ossola the wings of the monoplane appear to have broken, and the machine fell to the ground with M. Chavez beneath. Everyone will regret that the remarkable feat of crossing the Alps by aëroplane should have had such a melancholy termination. M. Chavez is the fifteenth airman who has been killed by flying accidents this year.

WE record with regret the death, on September 16, of Mr. Hormuzd Rassam, at the age of eighty-four years. Mr. Rassam in 1845 joined Mr. (afterwards Sir) A. H. Layard to assist him in his Assyrian researches. He was sent out again by the trustees of the British Museum in 1849 to take part in Layard's second undertaking, and carried on work for the British Museum until 1854. In 1864 he was selected by the British Government to proceed to Abyssinia to try to persuade King Theodore to release Consul Cameron and other prisoners. Though at first he met with success with King Theodore, he was, after a few months, thrown into prison with the original prisoners, who had been retaken, and he was kept in chains for nearly two years. The occurrences led to the war with Abyssinia in 1868. Mr. Rassam conducted further Assyrian explorations from 1876 to 1882, and during the Turko-Russian war he was sent to Asia Minor, Armenia, and Kurdistan by the British Foreign Office. Among his published works may be mentioned "British Mission to Theodore, King of Abyssinia, with Notices of the Country Traversed from Massowah through the Soudan, the Amhara, and back to Annesly Bay from Magdala," two vols., and "Asshur and the Land of Nimrod."

THE second International Congress of Alimentary Hygiene will be held in Brussels on October 4–8. In addition to the usual meetings of sections, the following lectures are included in the provisional programme:—Tuesday, October 4: Prof. Dastre, "The Ultra-violet Rays and their Application to Alimentary Hygiene"; October 5: Prof. Paterno, "The Chemical Sciences"; October 6: M. Bordet, "Hygiene and Bacteriology." Various social functions and visits to the exhibition, to the Colonial Museum, and to the Institut au Parc Leopold have also been arranged. Members and associates (subscription, 20 francs and 10 francs respectively) are admitted free to the Universal Exhibition during the time of the congress. Further information may be obtained of the honorary secretary, Mr. Cecil H. Cribb, 136 Shaftesbury Avenue, London, W.

THE annual foray of the mycological section of the Yorkshire Naturalists' Union was held at Sandsend, near Whitby, on September 17–22. The magnificent old woods

at Mulgrave, with their deep, well-watered ravines invariably produce a rich fungus flora independent of season, which to a very great extent determines the presence or absence of fungi in less favoured districts. Notwithstanding four previous visits, six agarics new to the British flora were met with, in addition to a species only previously recorded from Jersey. *Mycena flavipes*, a beautiful fungus with a pink cap and a bright yellow stem, was met with in some quantity. This fungus was first recorded as a British species from specimens collected in Mulgrave Woods about twenty-five years ago, and has not been met with elsewhere in this country. A considerable number of rare and interesting British species were also collected. Several parasitic fungi were also noted. The total number of species collected amounted to between four and five hundred. During the evenings, discourses on mycological subjects were given by Mr. Harold Wager, F.R.S., Mr. A. Clarke, Mr. T. Gibbs, and Mr. Geo. Massee. Mr. Cheesman exhibited a collection of Myxogastres collected in the Rocky Mountains, and Mr. A. Clarke exhibited an extensive series of coloured drawings of fungi. Much of the success of the meeting was due to the facilities kindly afforded by the Rev. the Marquis of Normanby.

PROF. FLINDERS PETRIE in *Man* for September records the discovery in the neighbourhood of the Pyramid of Sneferu (B.C. 4600) of a stone tomb dating from a time before the construction of the pyramid, the earliest private tomb in Egypt to which a date can be assigned. This burial is of the highest interest, as it shows that the body was completely unfleshed before it was wrapped in linen. It lies in a sarcophagus of red granite, the oldest stone sarcophagus known. It has long been known that in prehistoric burials the corpse was stripped of the flesh, the bones even being broken to extract the marrow. In the present case each bone was separately wrapped in linen; and the present discovery proves that the dissevering of the skeleton was the custom among the higher classes at the beginning of the Pyramid period.

IN the last progress report of work at Knossos Dr. A. J. Evans records a remarkable discovery of what he calls the "Tomb of the Double Axes," which has produced more definite evidence regarding the sepulchral cult and the conception of the after-world than any grave yet opened in Crete or prehistoric Greece. Here the double axes were socketed in sacral horns of plaster, and it would seem that the tomb, besides being a place of sepulture, was also a chapel, where the protection of the Great Mother of the prehistoric Cretan cult was sought for the shade of the departed warrior, the stone benches round the shrine being probably arranged for some memorial function in which the family took part. Inside the tomb was found a bronze axe, not of the thin ritual type, but a real prehistoric implement, probably used by the workmen at some early reopening of the sepulchral chamber to admit of the presentation of offerings to the dead.

AN interesting recent addition to the Maidstone Museum is a model of the fine dolmen situated at Coldrum, some 2¼ miles north of West Malling. The dolmen itself stands on the edge of a well-marked prehistoric cultivation terrace at the foot of the chalk escarpment and faces east, towards Kits Coty House, which is some six miles distant. It was in this dolmen that Mr. F. J. Bennett recently found some remains of prehistoric man, and it is to Mr. Bennett, assisted by Mr. Filkins, of Maidstone, that the model is due. It is built to scale, the model of each stone having been made and fixed at the site of Coldrum itself, thus ensuring an accurate representation. Mr. Bennett has also had prepared plans of the Coldrum and Addington megaliths, together with a photographic survey of the former and a tracing of the 25-inch map showing additional sarsens, so that visitors to the museum may more clearly understand the relations of the various parts and their surroundings. With so many of our megalithic remains being neglected or wilfully despoiled, it is an urgent necessity that similar models, plans, &c., should be made of the few which still remain intact.

A MEMOIR on "Factors in the Transmission and Prevention of Malaria in the Panama Canal Zone," by Dr. S. T. Darling, in the *Annals of Tropical Medicine and Parasitology*, vol. iv., No. 2, describes a number of very interesting observations and experiments on the development of the parasites of simple and malignant tertian malaria in mosquitoes, and on the infectivity of different species of anopheline mosquitoes in the region in question. *Cellia albimana*, the common white-hind-footed mosquito, a very hardy species, was found to be the most efficient transmitter of malaria, *C. tarsimaculata* scarcely less so; on the other hand, *Arribalzagia malefactor* belies its name, since it was not found possible to infect it. Incidentally, the author comes to a conclusion which will perhaps be a surprise to many—that the characteristic musical note of the mosquito is caused by the vibration of the proboscis, not by the wings in flight.

A RECENT number of the *Philippine Journal of Science* (vol. v., No. 1, Section B) contains seven papers by different investigators on the subject of the etiology of beriberi, together with a report of the discussion which followed the reading of these papers at the first biennial meeting of the Far-Eastern Association of Tropical Medicine, held at Manila in March. It was generally agreed, and a resolution was passed by the meeting to the effect, that "beriberi is associated with the continuous consumption of white (polished) rice as the staple article of diet." Evidence, experimental and otherwise, was brought forward to prove that in the process of polishing the rice the grains are deprived of certain outer layers, the pericarp and sub-pericarpal tissue, which appear to contain some substance or substances essential for the maintenance of the normal metabolism of nerve-tissues. On this view, beriberi is a disorder of metabolism, due to deficiencies of diet. The chief obstacle to the acceptance of this theory, it is pointed out, is that it does not explain the occurrence of beriberi in some tropical countries and its absence in others, such as Ceylon, where white rice is equally the staple diet of the natives. Some experts consider, therefore, that the diet is only the predisposing condition, and that the true cause of the disease has yet to be found.

A SYNOPSIS of the Silurian fossils of the South Yarra district forms the subject of a paper by Mr. F. Chapman, palæontologist to the Melbourne Museum, in the August number of the *Victorian Naturalist*. The presence of an eurypterid of the genus Pterygotus, of the peculiar brittle-star described by the author as a new genus, Gregoriara, and of the bivalve *Cardiola cornucopiae*, is stated to link the fauna with that of the British and Bohemian Silurian.

THE September issue of the *Irish Naturalist* is devoted to a report of the sixth triennial conference and excursion of the Irish Field Club, held at Rosapenna, County Donegal, on July 8–13. Notes on the natural history and

archæology of the district are contributed by a number of members of the club, among which reference may be made to Mr. Ussher's announcement of the discovery of five specimens of the humerus of the great auk.

DR. A. C. GÜNTHER, with the assistance of Mr. Tate Regan, has (in the *Journal des Museum Godeffroy*, Heft xvii., Hamburg, 1910) completed the description of the collection of fishes made in the Indian Ocean and South Pacific by Andrew Garrett. Four new species, *Trygon ponapensis*, *Tetrodon regani*, *Opichthys macrops*, and *O. garretti*, are described. The report is very beautifully illustrated by twenty coloured plates.

ATTENTION has previously been directed in NATURE to the need for uniform orthography of geographical names in Government departments; this need is exemplified by the "Return" of the British Museum for 1910. In 1909 Mrs. J. A. Brooke presented to the museum a series of specimens sent from China by her son, the late Mr. J. W. Brooke, some of which went to Bloomsbury and others to Cromwell Road. Those at Bloomsbury are entered (p. 77) as having been obtained in Szechuan, while those at Cromwell Road are recorded (p. 123) as coming from Sze-chuen.

WE have received copies of several papers on human skulls and skeletons and supposed evidence of human work, read by Dr. F. Ameghino before the Congreso Científico Internacional Americano, held at Buenos Aires in July last. In one he describes a skull from a cave in Cuba as a new species, under the name of *Homo cubensis*. Skeletons from the Moro district, on the Atlantic coast of Argentina, are described in a second paper under the name of *H. sinemento*, and stated to be of a more primitive type than the Neanderthal *H. primigenius*. These remains are stated to be of Lower Pampean age; in a third paper the author describes another skeleton, from the Upper Pampean, which is regarded as representing a third species, *H. caputinclinatus*. The other four papers relate to supposed evidence of man's presence in various formations, the oldest of which is classed as Upper Eocene.

To vol. xxviii., pp. 127–239, of the Bulletin of the American Museum of Natural History Dr. R. Broom contributes an important article on the relationship of the Permian reptiles of North America to those of South. After reviewing the leading types of each, he concludes that in the Upper Carboniferous northern South America was the home of a primitive vertebrate fauna from which originated both the North American Pelycosauria and the African Anomodontia (in the wider sense of the term). In the Permian this fauna invaded North America, where it soon became isolated. Early in the same epoch the Brazilian Mesosaurus reached Africa by a land-bridge, and later on appeared other types, which probably developed in the area now occupied by the South Atlantic. When sundered, the North American and African faunas underwent great development in divergent directions, the former undergoing many strange specialisations—notably in vertebral spines—while the latter showed a tendency to a great increase in the size of the limbs. This limb-lengthening, accompanied by the alteration of the phalangeal formula of the toes from 2.3.4.5.4 to 2.3.3.3.3, started the mammalian line of evolution, for directly the more specialised anomodonts raised their bodies above the ground they were well on the way to become mammals. Birds, in fact, "are reptiles that became active on their hind limbs; mammals are reptiles that acquired activity through the development of all four."

AN article entitled "Hunting Birds with the Camera," contributed by Mr. W. Bickerton to the October number of the *Royal Magazine*, gives a good idea of the great patience required by anyone who desires to photograph birds. The article is accompanied by several striking illustrations, including two of a reed-warbler feeding a young cuckoo. Mr. Bickerton says that, of all our summer visiting birds, the reed-warbler has its nest used most frequently by the cuckoo to deposit her eggs. He remarks, "In the area I am describing no fewer than seven different eggs of the cuckoo lay each in a different reed-warbler's nest, left there for the latter bird to hatch out."

THE second number of the botanical section of the current volume of the Philippine Journal of Science contains the latter portion of the critical enumeration of Philippine Leguminosæ prepared by Mr. E. D. Merrill, a third set of bryological determinations by Dr. V. F. Brotherus, and a short list of indigenous fungi compiled by Messrs. H. and P. Sydow.

AN investigation into the causes underlying a serious loss of gooseberry bushes in Cambridgeshire is recorded by Mr. T. F. Brooke and Mr. A. W. Bartlett in *Annales Mycologici* (vol. vii., No. 2). Two fungi fell under suspicion, but definite proof in the shape of infection experiments was only obtained for *Botrytis cinerea*, although good reason is adduced for finding a second cause of disease in *Cystoporina ribis*. The diseases are not in any way connected and distinct macroscopic and microscopic characters are defined for each fungus; further, it is noted that in no case were both fungi discovered on the same plant.

A NEW and peculiar type of resin collector that has been tried in the pine forests of Florida, U.S.A., is described by Mr. J. S. Woolsey, jun., in the *Indian Forester* (August). The tree is tapped by two small tunnels, about an inch in diameter and five inches long, bored from a common opening or mouth tangentially through the sap wood. The collector consists of two metal caps set at right angles, and connected by a hollow angle piece. One metal cap is fitted over the mouth, while a glass jar, into which the resin flows, is fitted to the other horizontal cap. It is claimed that the method gives an increased yield and a clean gum, and that evaporation is avoided.

SYSTEMATIC articles are prominent in the latest issue of the *Kew Bulletin* (No. 7), as, in addition to a long series of new species of Protea and other African diagnoses, Mr. J. S. Gamble contributes a second list of new Lauraceæ from the Malayan region, principally additions to the genera Cinnamomum, Alseodaphne, and Notophœbe, and Dr. O. Stapf presents a revision of the Australian plant *Epacris heteronema*. Also Mr. G. Massee describes several new exotic fungi, including a Sphærulina and a Phoma, both discovered on *Welwitschia mirabilis* in Damaraland. More important from an economic aspect is *Eutypa caulivora* (Sphæriaceæ), a parasite collected on rubber trees in Singapore, that kills its host by blocking up the water channels with mycelium.

THE Australian Commonwealth Bureau of Meteorology has commenced the issue of a monthly report from January last. It is intended to embody, *inter alia*, discussions on current weather, daily observations at each of the capital cities, and extracts, or brief articles, on matters of general scientific interest, and, judging from the first number, it gives promise of taking a prominent place among the leading weather bulletins. The principal article in the

January number deals with the disastrous flood during that month in the Upper Darling tributaries, owing to abnormally heavy rains, attributed by Mr. H. A. Hunt to the joint action of an anticyclonic area over the southern half, and a monsoonal depression operating in the northern half, of the continent. In the Namoi basin several places recorded more than 12 inches of rain between January 11 and 15, and at Bingara, in the area of the river Gwydir, 19·44 inches were registered, the normal for the whole month being $3\frac{1}{4}$ inches. The report states that, generally speaking, the amount of damage was inestimable, but the deposit left by the subsidence of the water has rendered the soil fertile over a vast area.

WE have received copies of several papers which have been published recently by members of the staff of the Reichsanstalt at Charlottenburg, amongst them one on the thermal expansion of metals, by Dr. E. Grüneisen, which appeared in the *Annalen der Physik* for August 5. The first part of the paper deals with the observations of expansion of platinum, palladium, copper, silver, aluminium, iron, nickel, and iridium made previously at the Reichsanstalt by Holborn, Day, Scheel and others, and the second part with observations made by the author on magnesium, zinc, cadmium, antimony, iridium, gold, lead, and bismuth by comparison of the expansion of a bar of each metal with that of a platinum standard bar by a method analogous to the double-mirror method of determining the bending of a beam. With the exception of zinc, cadmium, and possibly tin, the whole of the metals which have regular expansions confirm Thiesen's law that the rate of expansion is proportional to a power of the absolute temperature. The author finds that the power lies between 0·06 and 0·5, and is a periodic function of the atomic weight of the metal.

Engineering for September 23 contains a photograph of submarine "D 1," which is the largest vessel of its class belonging to the British Navy. An interesting development in this vessel consists in the application of wireless telegraphy to submarine work. Successful experiments have been carried out recently with this vessel in Torbay, the crusier *Bonaventure* establishing and maintaining communication with the "D 1" when submerged. The "D 1" replied from below the surface. The installation was tested when the submarine was submerged to a depth just sufficient to keep the periscope above water, *i.e.* about one-half of the telegraphy mast was below water. The possibilities of such a development are considerable, as not only could the actions of submarines be directed by these means from larger vessels, but a flotilla of submarines will be able to use the system for the purpose of communicating among themselves when submerged, their value in naval warfare being thus considerably improved.

THE progress of the great Barren Jack dam in Australia is described in the *Engineer* for September 23. This dam will be one of the largest in the world when finished. The design in plan gives a length of 784 feet, curved to a radius of 1200 feet, and a maximum height of 240 feet. The structure is of cyclopean concrete; the base is 163 feet wide and 20 feet high, with vertical sides, and this level has now been reached. The catchment area embraces 5000 square miles, mostly of hard shale formation, and much of it mountainous, which is snow-fed in winter. The maximum depth of water behind the dam will be 224 feet, and the capacity will be 33,380 millions of cubic feet. Nature has furnished a gorge in hills of granite, providing the best site and best materials for a dam, behind which is an unfailing supply of rainfall; a natural 220-mile channel, and, at the proper place, a foundation for a distributing weir. That advantage is now being taken of this almost ready-made but long neglected irrigation opportunity is a matter for congratulation. It is not intended to wait for the completion of the work before putting it to use. The building contract provides for the wall reaching a height of 110 feet in August, 1911, when storage will be started, so as to ensure irrigation in the summer of 1911–12. The remainder of the dam is to be finished in August, 1913.

WE have received from Ozonair, Ltd., of 95 Victoria Street, a catalogue of apparatus suitable for laboratory and research work. Four arrangements are described ranging in cost from 15*l.* to 100*l.* for alternating, and from 25*l.* to 110*l.* for direct current, for a complete installation operated from the street mains. It is claimed that the yield of ozone is greater than that of any other generator, and that the purity of the effluent is unapproached.

A REPORT on recent progress in the chemistry of the sugars, by Mr. J. S. Hepburn, appears in the Journal of the Franklin Institute for August. This paper reviews the work of Emil Fischer upon sugars and ferments, describes the synthesis of monoses, disaccharides, and glucosides, and discusses the fermentation of the sugars, the action of the various inverting enzymes, and the lock-and-key theory of enzyme action. The splitting of racemic sugar derivatives into their active components and asymmetric syntheses within the sugar are also considered. References are given to original papers, of which no fewer than seventy-four are by Prof. Emil Fischer and his colleagues or pupils.

A SUPPLEMENT of eighty-four pages to the *Columbia University Quarterly* gives an account of the Charles Frederick Chandler testimonial, presented on the occasion of his retirement from the positions of head of the department of chemistry and dean of the School of Mines of Columbia University. Prof. Chandler has been a college teacher during fifty-four years, and his retirement marked the close of his forty-sixth year of service at Columbia. A bibliography of fifty publications testifies to the fact that his keen interest in pure science was allied with much work of a public and philanthropic kind. His work on behalf of public health in New York was of the utmost value, and the story of his midnight raid upon the cattle stalls of Washington Market, as set forth in the *Columbia Quarterly*, will form a fascinating feature in some future history of municipal cleansing; the ingenious methods by which in the following years he overcame the prejudice of the poorer people against the isolation of small-pox cases is an eloquent testimony to his versatile ability.

Two important crystallographic papers, by Prof. Armstrong and Messrs. Colgate and Rodd, have recently appeared in the Journal of the Chemical Society. The investigation has been in progress since 1892. The work now described includes the crystallographic examination of no fewer than twenty-nine derivatives of the *p*-dihalogenbenzenesulphonic acids; but considerable progress has already been made in the study of the five similar series of isomeric acids in which the two halogens occupy the *ortho* and *meta* positions relatively to one another. The series now described is comparatively simple in its crystallographic properties; almost all the compounds belong to one of the two types of close-packed arrangement which Barlow and Pope have indicated for the benzene molecule, namely, the rhombohedral arrangement,

in which (*a*) one parameter has a value slightly below 2·780, or (*b*) two of the parameters are nearly equal. Amongst the sulphonic chlorides and bromides two isomorphous series are seen, the second series being restricted to compounds in which an iodine atom is present; it is noteworthy that the two chloriodobenzenesulphonic chlorides are found in different series, and that one of them was on one occasion obtained in a labile form, the crystals becoming cloudy and opaque when removed from the solvent from which they had separated. This behaviour indicates clearly that certain members of the series are actually dimorphous, and the whole series may therefore be regarded as isodimorphous. Isodimorphism was also detected amongst the anilides and toluides. It is remarkable that two other series, containing the halogen atoms in the *meta* position, which were examined by Dr. E. C. Jee in 1900, proved to be isotrimorphous and isotetramorphous respectively. The completion of the work on these series will be awaited with interest.

A SECOND edition of "A Text-book of Zoology," by Profs. T. Jeffrey Parker and W. A. Haswell, is announced as nearly ready by Messrs. Macmillan and Co., Ltd. The work has been subjected to careful revision throughout; some parts have been to a great extent rewritten, and a considerable number of new illustrations have been added.

OUR ASTRONOMICAL COLUMN.

VELOCITIES AND ACCELERATIONS OF THE EJECTA FROM HALLEY'S COMET.—Profs. Barnard and Lowell and Senor J. Comas Sola all deal with the velocities and accelerations of the matter ejected from the body of Halley's comet, during May and June, in No. 4441 of the *Astronomische Nachrichten* (pp. 11–16).

From measures of photographs taken at the Yerkes Observatory (Y), Honolulu (H), and Beirut (B) on June 6, Prof. Barnard found the velocities of recession, of a well-marked feature in the tail, given in the following table :—

Stations	Interval between photographs Hours	Hourly motion ′	Recession per second: From comet Miles	From comet km.	From sun Miles	From sun km.
Y–H	4·25	3·60	23·1	37·2	39·7	63·9
Y–B	15·15	5·17	33·1	53·3	49·7	80·0
H–B	10·90	5·78	37·3	59·7	53·9	86·4

These results show a strong acceleration in the mass measured, which was about 1·5° from the head; from the last two photographs this acceleration was about 14 miles (22 km.) per second.

Similar results are obtained by Prof. Lowell from the measures of two photographs taken, with rather less than an hour's interval, on May 23. On these photographs are shown four knots in the tail, at distances varying from 1° 28′ to 6° 15′ from the head, and the measures give for the velocities of the particles composing the knots 13·6, 17·2, 19·7, and 29·7 miles per second respectively, thus showing an acceleration of the velocities as the particles receded further from the head.

Senor Sola, dealing with the velocities of the gaseous globes ejected from the nucleus on June 4, shown on photographs taken on June 4, 6, and 7, finds that between June 4 and 6 the acceleration of these ejecta was 0·148 metre per second, and between June 6 and 7 was 0·248 metre per second.

OBSERVATIONS OF COMETS.—New observations of three comets are published in No. 4441 of the *Astronomische Nachrichten*. A number of observers give positions, determined during August, of Metcalf's comet, 1910*b*, and generally describe it as a faint object, magnitude about 11·0, having a central condensation and a suspicion of a tail.

D'Arrest's comet was observed at the Algiers Observatory on August 26 and 29 and September 1 by M. Gonnessiat. The correction to Leveau's ephemeris was an increasing quantity, and on September 1 had the value −1m. 19·39s., +6′ 16·2″; the comet is described as a diffuse nebulosity of 2′ or 3′ diameter, with a feeble, central condensation of about magnitude 14·5.

With a 9-inch refractor Mr. Innes found that, on August 11 and 12, Halley's comet was a most difficult object, and was, therefore, much fainter than the magnitude (7·4) given in No. 4423 of the *Astronomische Nachrichten*. Observations made between July 26 and August 11 indicate a correction of about −11s. to the ephemeris given in the same place; the ephemeris is nearly correct in δ. When last seen the comet was a nebulous object, of 1′ diameter, showing a slight condensation.

THE SOLAR PHYSICS OBSERVATORY, SOUTH KENSINGTON.—From the report published by the Board of Education, dealing with the work done at the Solar Physics Observatory, South Kensington, during 1909, we learn that spectroheliograms of the solar disc were obtained on 147 days during the year; of the 286 negatives secured, 231 have been selected for the measurement of flocculic areas in pursuance of the scheme for establishing a cooperative daily record of such areas. Fifty-seven photographs showing the calcium prominences at the limb were also secured with the spectroheliograph. Visual observations of the sun were possible on 232 days, and "no spots" was recorded on five occasions. The spectra of 138 spots were observed visually, and show that the lines chiefly affected, in the region F–D, are due to V, Ti, Sc, and Mg, associated with H. A powerful instrument for the photographic recording of sun-spot spectra cannot be used owing to the vibration occasioned by traffic in the vicinity. Work with the 36-inch reflector on Halley's comet and other objects was also restricted by the poor observing conditions. A large number of photographs of stellar spectra were secured with various prismatic cameras, those obtained with a calcite-quartz optical system being employed for the temperature-comparisons of various stars.

THE DETERMINATION OF LONGITUDE.—In an interesting brochure of sixty-two pages, now published as an extract from the journal *L'Horloger*, Dr. Jean Mascart recounts the history of the determination of longitudes, with a special chapter on the invention and development of marine chronometers, and an account of the voyage of the *Flore*, which had for its purpose the actual testing of the different methods of determination, in 1771–2. The brochure is well illustrated with portraits and cuts of historical instruments and their parts, and contains numerous references to the literature of the subject with which it deals.

THE ROYAL COMMISSION ON WELSH MONUMENTS.

THE first report of the commission contains a general account of work already done, and an outline of the work proposed to be done. The first volume of classified information the commission hopes to publish in the course of the present year, in the form of an inventory of monuments in the county of Montgomery.

The task undertaken is truly immense. No type of monument nor available source of information seems to have been overlooked in the outline given. There are, of course, inevitable limitations to be considered, but it is not likely that the work in value and extent will ever be a subject for serious adverse criticism. As, however, the commission's plan of campaign has been published at a time when that plan may be reconsidered in some details before the information collected has been cast into a final form, one may venture to direct attention to a class of facts which is not even mentioned in the report, but which may be shown to be by far the most important within the scope of the inquiry.

The most important documents are the monuments themselves. Whatever facts may be directly elicited from them take precedence of all facts elicited from "finds," folklore, and documentary information. They may be